Remarks

In view of the above amendments and the following remarks, reconsideration and further examination are requested.

Claims 36-38 and 48 have been rejected under 35 U.S.C. §102(e) as being anticipated by Hanson (US 6,091,498). Claims 36, 37 and 48 have been rejected under 35 U.S.C. §102(e) as being anticipated by White (US 6,235,634). Claim 39 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Hanson in view of Ting (US 6,017,437). Claims 40 and 41 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hanson in view of Uzoh (US 6,140,234). Claims 42-47 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hanson in view of Uzoh ('234) and further in view of Uzoh (US 6,117,784) and either Dahms (US 5,849,171) or Dahms (US 5,433,840).

Claim 36 has been amended so as to further distinguish the present invention from the references relied upon in the above-mentioned rejections. These amendments are supported in the original specification at least at page 27, lines 19-27; page 29, lines 13-18; and Figure 10.

Claims 38 and 40 have been canceled without prejudice or disclaimer to the subject matter contained therein.

Claims 39 and 41-47 have also been amended so as to now be dependent from claim 36 and to include minor editorial revisions.

Claim 49 has been added. Claim 49 is supported in the original specification at least at page 31, lines 5-20 and Figure 10.

The above-mentioned rejections are submitted to be inapplicable to the amended claims for the following reasons

Claim 36 is patentable over Hanson and White, since claim 36 recites an apparatus including, in part, an electroless plating unit for performing an electroless plating process to form an initial layer on a substrate, wherein the electroless plating unit includes a plating cell for forming a hermetically sealed space with the substrate, the hermetically sealed space having a volume sufficient for receiving a minimum amount of an electroless plating liquid required for the electroless plating process. Hanson and White both fail to disclose or suggest an electroless plating unit as recited in claim 36.

Hanson discloses a semiconductor processing tool 10 that includes an interface section 12, wafer transport units 62 and 64, and processing modules 20, 22 and 24. (See column 3, line 42 - column 3, line 43 and Figure 2). Hanson also discloses a plating module 810 dedicated to electrochemical copper deposition and a semiconductor processing station 900 that is specifically adapted to serve as an electroplating station. (See column 9, lines 8-25; column 20, line 65 - column 22, line 48; and Figures 11 and 33). However, Hanson fails to disclose or suggest an electroless plating unit including a plating cell for forming a hermetically sealed space with a substrate as recited in claim 36.

White discloses a substrate fabrication system that includes an automatic cassette loading system 60, a robot 70, a clean tunnel 80, a load lock chamber 50 for heating, a load lock chamber 52 for cooling and at least one processing chamber 54. The processing chamber 54 is disclosed as being a CVD chamber, a PECVD chamber, a PVD chamber and/or a number of other chambers. (See column 4, line 46 - column 5, lines 67; abstract; and Figure 2). However, White also fails to disclose or suggest an electroless plating unit including a plating cell for forming a hermetically sealed space with a substrate as recited in claim 36.

As a result, it is apparent that neither Hanson nor White discloses or suggest the present invention recited in claim 36.

In sections 8 and 9 of the Office Action, Uzoh ('234) and Uzoh ('784) are relied upon as disclosing electroless plating. To this end, Uzoh ('234) does disclose a method for selectively filling recesses with a conductive metal. The method includes depositing a seed layer 6 with either a CVD method or an electroless plating method on a barrier layer 4 of an insulating layer. A conductive metal 8 is then electroplated in recesses of the seed layer 6. (See column 3, lines 55-67 and column 4, lines 24-26). Further, Uzoh ('784) discloses a process for integrated circuit wiring. The process includes either electroplating or electroless plating a metal in opening in a photoresist pattern to form the wiring. (See column 3, line 37 - column 4, line 20).

However, claim 36 recites an electroless plating unit including a plating cell for forming a hermetically sealed space with a substrate, the hermetically sealed space having a volume sufficient for receiving a minimum amount of an electroless plating liquid required for the electroless plating process. Since Uzoh ('234) and Uzoh ('784) both fail to disclose or suggest any type of device for

implementing their methods, it is apparent that neither Uzoh ('234) nor Uzoh ('784) discloses or suggests the features of the electroless plating unit recited in claim 36.

As for (1) Ting, (2) Dahms ('840) and (3) Dahms ('171), relied upon in sections 7 and 9 of the Office Action, these references are relied upon as disclosing (1) spinning a wafer 35 to enhance rinsing and drying, (2) an acid bath for the galvanic deposition of copper, and (3) and an acid bath for copper plating, respectively. However, Ting, Dahms ('840) and Dahms ('171) all fail to disclose or suggest the above-discussed electroless plating unit as recited in claim 36.

Regarding new claim 49, in addition to being patentable for the reasons set forth above in support of claim 36, it further recites that the electroless plating unit includes a waste liquid tank for receiving the electroless plating liquid that has been used for the electroless plating process without circulating the electroless plating liquid. The references also fail to disclose or suggest a waste liquid tank as recited in claim 49.

Because of the above-mentioned distinctions, it is believed to be clear that claims 36, 37, 39 and 41-49 are allowable over the references relied upon in the rejections. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 36, 37, 39 and 41-49. Therefore, it is submitted that claims 36, 37, 39 and 41-49 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

Akihisa HONGO et al.

By: David M. Ovedovitz

David M. Ovedovitz
Registration No. 45,336
Attorney for Applicants

DMO/jmj
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
September 2, 2004